Biometric Verifier Architectures for Remote E-Authentication

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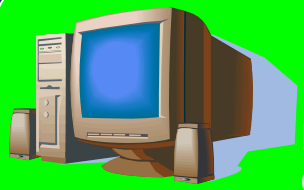
E-Authentication Context

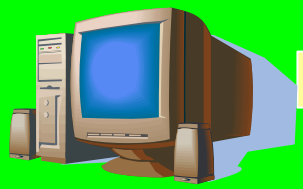
Claimant

Biometric

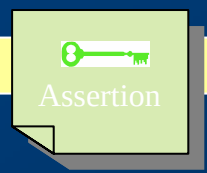
Credential

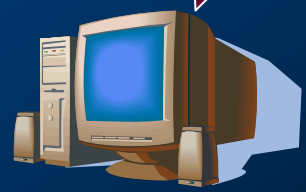


Biometric Capture Terminal



Verifier





Relying Party

Where should the biometric verification be performed?

Verification at the Terminal

Claimant

Biometric

Credential

Claimant Produces Credential and Biometric Sample
Terminal requests Enrolled Biometric from CSP over SAP
Terminal Performs Match and Creates Similarity declaration to CSP over SAP
Terminal Destroys Biometrics
CSP performs PoP on behalf of Terminal with Verifier over SAP
Verifier issues Assertion to Relying Party

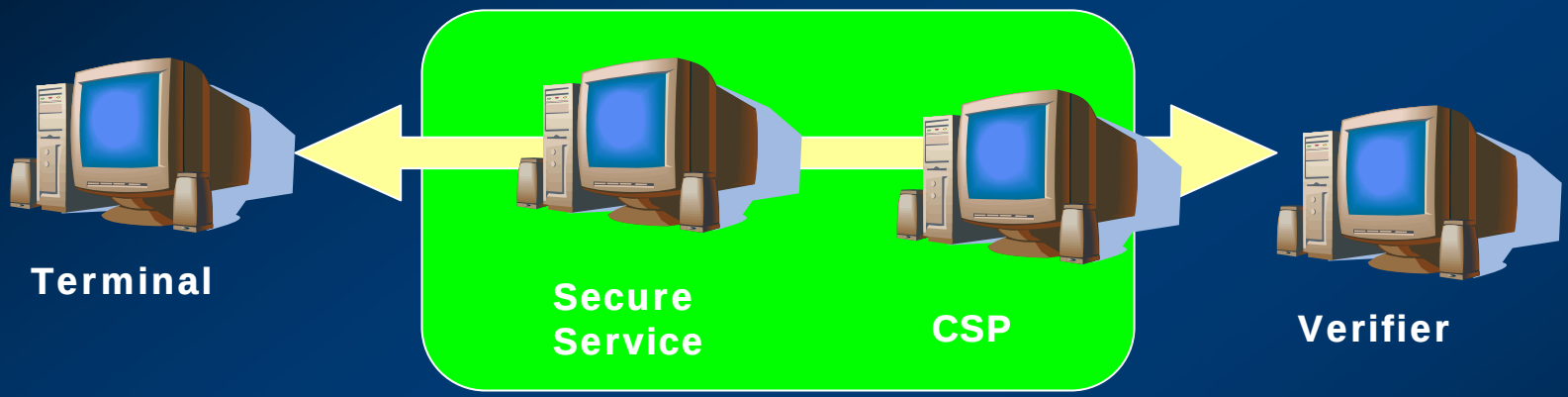
Threat: Insecure Terminals collect biometrics from Claimants
Threat: Terminals' private keys compromised to issue false similarity declarations
Issue: Precludes some biometrics

Verification at a Service

Claimant

Biometric

Credential



Claimant Produces Credential and Biometric Sample
Terminal Sends Biometric and Credential Info to Secure Service over SAP
Secure Service requests Enrolled Biometric from CSP over SAP
Secure Service Performs Match and Creates Similarity declaration to CSP over SAP
Secure Service Destroys Biometrics
CSP performs PoP on behalf of Terminal and Secure Service to Verifier over SAP
Verifier issues Assertion to Relying Party

Threat: Insecure Terminals or Secure Service collect biometrics from Claimants
Threat: Insecure Service's private keys compromised to issue false similarity declarations
Issue: Can increase network traffic

Verification on the Token

Claimant

Biometric

Credential

Claimant Produces Credential and Biometric Sample
Terminal Sends Biometric to Hard Token associated with Credential
Token performs Match (with embedded enrolled biometric)
Token performs PoP with Verifier over SAP
Verifier issues Assertion to Relying Party

Threat: Insecure Terminals collect biometrics from Claimants
Issue: Precludes many biometrics, can be costly, can add transaction latency

End

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